

Amendments to the Specification

Please replace the Abstract paragraph on beginning on page 21, line 7 with the following amended paragraph:

~~An apparatus and method is disclosed for a variable bandwidth X-DSL modem. The A~~
modem implements implementing a discrete multi-tone (DMT) line code with ~~varying~~
selectable tone spacing ~~of a multi-tone communication channel~~ depending on the bandwidth
availability on selected a corresponding subscriber lines line. For short-subscriber loops that
qualify for high data rates the spacing between tones in a tone set is expanded to support the
higher data rates. A DFT/IDFT engine is implemented in the DSP with a DFT portion to
convert digitized tone sets on a receive path for each channel to digitized symbols and an
IDFT portion to convert the digitized symbols on the transmit path to digitized tone sets. The
DFT/IDFT A Fourier transform engine in the modem provides ~~variable~~ selectable tone
spacing for ~~the at least one~~ each multi-tone communication channel by selection of a
processing interval for each successive tone set of the multi-tone communication channel. A
variable rate interpolator couples to the IDFT portion of the DFT/IDFT engine and sets the
sampling rate at the output of the IDFT to match the sampling rate of a digital input to the
digital-to-analog (DAC) portion of the analog front end (AFE). A variable rate decimator
provides corresponding capability on the receive path. A scheduler couples to the DFT/IDFT
engine for scheduling channels to be processed by the DFT/IDFT engine during each
processing interval. An initialization procedure is used to determine appropriate tone spacing
to be used for the channel based on the loop qualifications of the channel.